

eyes, and another,  $\Lambda$ -shaped, on sacral region; limbs with dark cross bars. From snout to vent 26 millim.

One specimen from Taiwanfoo, S. Formosa.

*Cæcilia Buckleyi*, sp. n.

Maxillary teeth rather large, about 10 on each side; vomeropalatines 8 on each side; inner mandibulars small, few; outer mandibulars large, especially the most anterior, 9 on each side. Snout broad, rounded, not very prominent, shorter than the distance between the eyes; latter very distinct; tentacle below the nostril. Body short for the genus, cylindrical; 175 circular folds, all complete. Tail indistinct, rounded. Olive above, lighter beneath and round the lower jaw; throat olive. Total length 160 millim.; diameter of body 4 millim.

A single specimen, probably young, collected at Intac, Ecuador, by Mr. Buckley.

XLVI.—*On the Genus Megascolex of Templeton.*

By F. E. BEDDARD, M.A., F.R.S.E.

IN a recent paper by Dr. Horst\* of Leyden, the author, in describing a collection of earthworms belonging to the genus *Perichaeta* of Schmarda, takes occasion to point out the identity of this genus with another genus established fifteen years previously by Templeton, viz. *Megascolex*. Having recently had an opportunity, through the kindness of Dr. Traquair and Prof. F. Jeffrey Bell, of examining several specimens preserved in the British Museum and the Edinburgh Museum of Science and Art, which are undoubtedly Templeton's *Megascolex cæruleus*, I think it worth while to point out that these two genera, *Megascolex* and *Perichaeta*, are by no means identical, but present numerous and important differences. In the paper already mentioned Dr. Horst recapitulates the main points in Templeton's original description of *Megascolex cæruleus*, and calls attention to the misinterpretations of this description introduced by subsequent writers; there is no doubt that these misinterpretations, for which Schmarda is mainly responsible, in reality caused Perrier† and Vaillant‡ to separate the genera *Megascolex* and *Perichaeta* in their tables of classification, since there is nothing in Templeton's description itself which would

\* Notes from the Leyden Museum, vol. v. no. xvii.

† Nouv. Arch. du Mus. t. viii. (1872).

‡ Ann. Sci. Nat. sér. 5, x. (1868).

serve to clearly differentiate the two. Templeton's original notice of *Megascolex cæruleus* is contained in a letter read before the Zoological Society of London in 1845\* ; but the facts given chiefly relate to certain external characters and are not at all sufficient to determine the systematic position of the earthworm. The setæ are stated to be arranged in a continuous ring round each segment, except in the mesial line of the back, where they are altogether wanting, while the generative organs occupy segments 16, 17, 18. The latter part of the description is too vague to be of any use, since it is not clear what is meant by "generative organs," whether the testes and ovaries, their external apertures, or, finally, the segments upon which the clitellum is developed. Schmarda† distinguished his genus *Perichæta* mainly by the arrangement of its setæ; his generic definition is as follows:—"Setæ totam segmentorum circumferentiam in formâ annuli cingentes." He mentions Templeton's genus *Megascolex* as having the setæ developed *only* upon the back, and, in fact, entirely reverses the account of the arrangement of the setæ given by Templeton; the "generative organs" of Templeton's description Schmarda interprets as the clitellum. In 1869‡ Baird examined the type specimens of *Megascolex cæruleus* in the British Museum, and came to the conclusion that there was no difference of importance (indeed no difference at all, except size) between that genus and *Perichæta*. The only structures, however, which he seems to have compared with any care in the two forms are the setæ; and these are precisely the very worst characters that could have been chosen to determine such a question. It is impossible to arrive at any correct notion about the systematic position of an earthworm without an examination of its internal structure and the relations of the male generative apertures to the clitellum. Vailant§, and afterwards Perrier||, more fully demonstrated the importance of the latter character; and Perrier has sufficiently shown how earthworms, similar in external characters, may differ most widely in their anatomy; moreover Baird's figures of the setæ of *Megascolex cæruleus* and *Perichæta diffringens* do show some slight differences, quite enough to distinguish them if it were at all possible to make use of such a trifling external character. Baird makes no statements at all about the clitellum and generative pores in *Megascolex*.

\* P. Z. S. 1845, p. 89.

† Neue wirbellose Thiere (Leipsic, 1861), Bd. i. 2.

‡ P. Z. S. 1869, p. 40.

§ Ann. Sci. Nat. *loc. cit.*

|| Nouv. Arch. &c. *loc. cit.*

Dr. Horst, in the paper already quoted, entirely agrees with Baird's identification of *Megascolex* with *Perichæta*, and naturally points out that the latter name must be cancelled, since *Megascolex* has a priority of fifteen years. Although the last-named author does not state his own reasons for this identification, but relies chiefly upon Baird's authority, any one reading Templeton's description would naturally think that the earthworm presented no points of generic difference from *Perichæta*; the distribution of the setæ is not sufficiently peculiar to mark off the genus *Megascolex* from *Perichæta*, inasmuch as we know that a *continuous* ring of setæ is not always found in species which would unhesitatingly be assigned to the genus *Perichæta*. The only other point in Templeton's description, the account of the generative organs, might well be referred to the apertures of the male generative ducts upon the 18th segment and to genital papillæ, such as are frequently found in *Perichæta*.

None of the specimens in the British Museum nor the single specimen in the Edinburgh Museum had the clitellum fully developed, though in one specimen segments 13-19 showed a slightly different colour from the rest of the body, which is doubtless a trace of a clitellum in a condition of development or degeneration. The specimen in the Edinburgh Museum, which presents an interesting peculiarity to be described shortly, Dr. Traquair kindly allowed me to open, and I at once ascertained that it was identical with an earthworm recently described by myself\* as new, under the name of *Pleurochæta*; I was able to verify my description and to add some details as well as to make one or two corrections. The specimen in the Oxford Museum had a fully developed clitellum, extending from the 13th to about the 20th segment, and therefore *beyond* the apertures of the male generative duct, which are in segment 18. This fact alone is amply sufficient to show that there can be no possibility of confounding this earthworm with *Perichæta*, seeing that in this latter genus, as is well known, the clitellum occupies certain segments *anterior* to the openings of the male generative ducts, which only agree with those of *Megascolex* (as also of other genera, e. g. *Pontodrillus*) in being situated upon the 18th segment and in being provided with a prostate gland. The absence of a fully developed clitellum in the specimens of *Megascolex* contained in the national collection renders it, of course, more difficult to distinguish this genus from *Perichæta*, though a careful examination even of these specimens, and with regard to external characters only, reveals at once certain points of difference.

\* Trans. Roy. Soc. Edinb. vol. xxx. pt. ii.

In all the specimens, with one exception, the ventral surfaces of the 17th, 18th, and 19th segments are traversed by two thick glandular folds (the remnant of the clitellum), differing by a yellowish colour from the surrounding integument, and separated from each other by a space of about  $\frac{1}{4}$  inch: in the groove on the inner side of each of these folds are situated the male generative apertures and two papillæ; the former lie in the middle of the 18th segment, just in front of the row of setæ which traverses it, whilst the latter are upon the boundary-line between segments 17-18 and 18-19 respectively; the rows of setæ upon segments 17, 18, and 19 stop short at the outer edge of the glandular fold. Although it is well known that many species of *Perichaeta* possess genital papillæ in the neighbourhood of the male genital apertures, an inspection of Perrier's figures of these structures at once shows that they are not quite the same as those of *Megascolex*; instead of being upon the boundary-line between two segments, they are quite in the middle of a segment in the region occupied by the row of setæ. In one of the five specimens of *Megascolex* that are in the national collection the male genital apertures and the papillæ, instead of being hidden away at the bottom of a deepish groove, are situated upon the upper surface of an oval longitudinal swelling which extends over exactly the same number of segments as the longitudinal fold. Upon the 13th segment are two apertures, which are most probably the external openings of the oviducts; like the male generative apertures they are placed just in front of the row of setæ. The specimen in the Edinburgh Museum, which in other respects showed a perfect agreement with the five of *Megascolex* in the British Museum, has only a *single oviducal aperture* situated upon the middle of the ventral surface of the same segment and surrounded by a circular area differing somewhat in colour and appearance from the rest of the integument.

With regard to the internal structure of *Megascolex* I have nothing to add to my former description, where the numerous differences between *Megascolex* and *Perichaeta* are indicated. I append a definition of the two genera.

#### PERICHAETA, Schmarada.

*Perichæta*, Schmarada, Neue wirbellose Thiere, 1861, Bd. i. 2.

*Megascolex*, Baird, P. Z. S. 1869, p. 40.

*Perichæta*, E. Perrier, Nouv. Arch. du Mus. 1872.

*Megascolex*, Horst, Notes Leyden Museum, vol. v., note xvii. p. 182.

Setæ generally arranged in a continuous row round the middle of each segment; clitellum occupying 2, 3, or 4 seg-

ments (14–17). Male generative apertures paired, and situated upon 18th segment of body, which is always *behind* the clitellum; genital papillæ occasionally developed in neighbouring segments. Female generative aperture single, and within the clitellum upon the 14th segment. Two pairs of testes, more or less solid and compact, in segments 11 and 12; terminal portion of vas deferens on either side connected with the duct of a large prostate gland. Copulatory pouches varying in number from two to four pairs, and provided each with a variously shaped supplementary pouch or pouches. Intestine with a cæcum on either side in 20th segment\*.

#### MEGASCOLEX, Templeton.

*Megascolex*, Templeton, P. Z. S. 1845, p. 89.

*Pleurochæta*, F. E. B., Trans. Roy. Soc. Edinb. vol. xxx. pt. ii.

Setæ arranged in nearly a continuous row round each segment, only failing for a short space in the dorsal and ventral median lines; clitellum occupying segments 13–20, but not developed upon the area which separates the male genital apertures and papillæ of one side from those of the other. Male genital apertures paired and situated upon 18th segment of body, which is within the area over which the clitellum extends; genital papillæ two pairs, developed upon boundary-line between 17th–18th and 18th–19th segments respectively. Female generative pore single or double, upon 14th segment. A single pair of testes, branched and racemose, in 12th segment; a large prostate gland on either side in 18th segment. Copulatory pouches simple and unprovided with any supplementary pouches; two pairs situated in segments 8 and 9. Intestine with no cæcum, but with a series of large compact glands arranged in fifteen or sixteen pairs, commencing at about segment 106.

XLVII.—*On the Hymenoptera collected during the recent Expedition of H.M.S. 'Challenger.'* By W. F. KIRBY, Assistant in Zoological Department, British Museum.

THE series of Hymenoptera collected during the voyage of H.M.S. 'Challenger' is interesting not only on account of several apparently new species having been obtained, but because

\* In two species, *P. Sieboldi* and *P. musicus*, Horst ('Notes Leyden Museum,' &c. pp. 192 & 194) describes six of these cæca on each side; but in the latter species, at least, they do not seem to be at all regular in their presence.